

Claims

What is claimed is:

1. A particle detector comprising first and second delay line anodes adaptably mounted in spaced relation to have adjustable spacing therebetween.
2. The particle detector of claim 1 wherein one of:
 - a. vacuum, or
 - b. a gasis interposed between the first and second delay line anodes.
3. The particle detector of claim 1 wherein the first and second delay line anodes each have an active area upon which particles impinge, and wherein no structure is interposed between the active areas of the first and second delay line anodes.
4. The particle detector of claim 1 wherein the first and second delay line anodes are identical.
5. The particle detector of claim 1 wherein the first and second delay line anodes are interchangeable within the particle detector without substantial effect on detector performance.

6. The particle detector of claim 1 wherein:
- a. the first and second delay line anodes each include an elongated signal line thereon;
 - b. the first delay line anode has a first anode active area upon which particles impinge, the first anode active area containing at least a portion of the first delay line anode's elongated signal line thereon;
 - c. the second delay line anode has a second anode active area which receives particles from the first anode active area;
 - d. the second anode active area contains a length of the second delay line anode's elongated signal line, the length having a configuration and dimensions identical to the portion of the first delay line anode's elongated signal line resting within the first anode active area.
7. The particle detector of claim 1 wherein the first and second delay line anodes each include a signal layer and a ground layer with a dielectric layer interposed therebetween, the signal layer having an elongated signal line defined thereon, and wherein the signal line of the first delay line anode is identical to the signal line of the second delay line anode.
8. The particle detector of claim 1 wherein the first and second delay line anodes each include a signal layer and a ground layer with a dielectric layer interposed therebetween, and wherein the dielectric layer of the first delay line anode has the same thickness as the dielectric layer of the second delay line anode.
9. The particle detector of claim 1 wherein at least one of the first and second delay line anodes is defined by metallic foil layers laminated onto opposing sides of a thermoplastic film.

10. The particle detector of claim 1 wherein at least one of the first and second delay line anodes is formed of flex circuit material.

11. The particle detector of claim 1 wherein at least one of the first and second delay line anodes is sufficiently flexible that it may be bent to adopt an angle of curvature of at least 45° without breaking.

12. The particle detector of claim 1 wherein each of the first and second delay line anodes include:

- a. active areas whereupon particles impinge, with the active area of the second delay line anode receiving particles from the active area of the first delay line anode,
- b. parallel lengths of signal line, wherein:
 - i. several lengths extend at least partially outside of the anode's active area, and
 - ii. the lengths of signal line in the first delay line anode extend at a non-parallel angle with respect to the lengths of signal line in the second delay line anode.

13. A particle detector comprising:

- a. a first delay line anode including an elongated first anode signal line, a first anode ground layer, and a first anode dielectric layer therebetween;

the first delay line anode further including a first anode active area upon which particles impinge, the first anode active area containing at least a portion of the first anode signal line thereon;

- b. a second delay line anode including an elongated second anode signal line, a second anode ground layer, and a second anode dielectric layer therebetween;

the second delay line anode further including a second anode active area which receives particles from the first anode active area, the second anode active area containing at least a portion of the second anode signal line thereon;

wherein at least a portion of the second anode active area has the thickness of its second anode dielectric layer being identical to that of the first anode dielectric layer in the first anode active area.

14. The particle detector of claim 14 further wherein at least a portion of the second anode active area has the configuration of its second anode signal line being identical to that of the first anode signal line in the first anode active area.

15. The particle detector of claim 15 further wherein at least a portion of the second anode active area has the configuration of its second anode ground layer being identical to that of the first anode ground layer in the first anode active area.

16. The particle detector of claim 14 further wherein at least a portion of the second anode active area has the thickness of its second anode ground layer being identical to that of the first anode ground layer in the first anode active area.

5 17. The particle detector of claim 17 further wherein at least a portion of the second anode active area has the configuration of its second anode ground layer being identical to that of the first anode ground layer in the first anode active area.

10 18. The particle detector of claim 14 wherein no structure is interposed between the first anode active area and the second anode active area.

15 19. The particle detector of claim 19 wherein one of:

a. vacuum, or

b. a gas

is interposed between the first and second delay line anodes.

20 20. The particle detector of claim 14 wherein the second delay line anode may be interchanged with the first delay line anode, whereby the second anode active area receives particles from the first anode active area, without substantial effect on detector performance.

21. The particle detector of claim 14 wherein the first and second delay line anodes are adjustably mounted in spaced relation to have adaptable spacing therebetween.

22. The particle detector of claim 14 wherein at least one of the first and second delay line anodes has:

- a. its signal line and ground layer defined by metallic foil, and
- b. its dielectric layer defined by a thermoplastic film,

wherein the signal line and ground layer are laminated onto opposite sides of the dielectric layer.

23. The particle detector of claim 14 wherein at least one of the first and second delay line anodes is formed of flex circuit material.

24. A particle detector comprising:

- a. a first delay line anode having a first anode active area thereon, upon which particles impinge;
- b. a second delay line anode having a second anode active area thereon, upon which particles are received from the first delay line anode;

wherein no structure is interposed between the first anode active area and the second anode active area.